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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/615,233	07/13/2000	ICHIRO KASAI	15162/02080	4352

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EXAMINER

LEWIS, DAVID LEE

ART UNIT PAPER NUMBER

2673

DATE MAILED: 05/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
09/615,233

Applicant(s)
Kasal et al.

Examiner
David L Lewis

Art Unit
2673



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jul 13, 2000
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirements.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 1 6) ☐ Other:

Title: Image Display Apparatus

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.
2. The following title is suggested: "Head-Mounted Image Display Apparatus".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Okamura (5601352).**
5. **As in claim 11, Okamura teaches of a head-mounted image display apparatus comprising: an image display element, figure 4 item 3-5; a projection optical system that projects an image displayed by said image display element, figure 4 item 14; a screen onto which the image is projected by said projection optical system, figure 4 item 7; and a combiner that reflects image light reflected at said screen, and transmits external light, figure 4 item 13, column 6 lines 54-60. As in claim 12,**

Title: Image Display Apparatus

Okamura teaches wherein said combiner further transmits image light from said projection optical system and directs it to said screen, **figure 4 items 7 and 15.**

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. **Claims 1, 3, 4, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanano (6185045).**
8. **As in claim 1, Hanano teaches** of a head-mounted image display apparatus comprising: an image display element, **figure 9 item 1**; a screen onto which the image is projected by said projection optical system, **figure 9 item 2**; and a combiner disposed between said projection optical system and said screen, wherein said combiner transmits image light and directs it to said screen, and reflects the image light reflected at the screen, figure 9 item 3. **However said embodiment of Hanano is silent**

Title: Image Display Apparatus

of teaching a projection optical system that projects an image displayed by said image display element. Said projection systems for directing image light are well known as shown by **Hanano in figure 1(a&b)**. While missing from figure 9 said projection system would have been an obvious design enhancement given its wide usage in head-mounted image display systems for such purposes as projecting the image of the LCD in such a way that the projected image is sharp as far as the periphery of the displayed image. **Therefore it would have been obvious** at the time of the invention for the skilled artisan to modify the head mounted image display apparatus of Hanano by combining the projection system of a first embodiment with the image system of a second embodiment for the purpose of enhancing the display, as found in claim 1.

9. **As in claim 3, Hanano teaches wherein** said screen is disposed above or below a user's pupil, figure 9 item 2. **As in claim 4, Hanano teaches** further comprising an eyepiece optical system disposed between said combiner and the user, wherein said eyepiece optical system enlarges the image projected onto said screen, figure 9 item 13. **As in claims 7 and 8, Hanano teaches** wherein said image display apparatus has a plurality of units each including said image display element and said projection optical system, figures 1(a&b) and 60. **As in claim 9, Hanano teaches** wherein said screen has a retro reflection characteristic, figure 9. **As in claim 10, Hanano teaches** wherein said combiner is a half mirror or a polarization separation member, figure 9 item 3.

Title: Image Display Apparatus

10. **Claims 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hanano (6185045) in view of Okamura (5601352).**
11. **As in claims 2, 5, and 6, Hanano teaches** of the invention as applied above to claims 1 and 4, but is silent as to said external light transmission and optical element. **Okamura teaches** of said external light transmission via said half mirror as well as said optical element with substantially zero optical power, **figure 4 item 16, column 6 lines 54-60**. Given both Hanano and Okamura teach of like head mounted displays their features represent enhancements applicable each system as well known in the art. The eyepiece of Hanano can be adapted for the system as taught by Okamura or the transmissive half mirror and optical element can be adapted as well known enhancements to the system as taught by Hanano, for the purpose of improving the display. **Therefore it would have been obvious** to the skilled artisan at the time of the invention to improve the system as taught by Hanano by adapting the transmissive half mirror and optical element as taught by Okamura for the purpose of allowing the user to improve the system by allowing the transmission of external light as found in claims 2, 5, and 6.

Serial Number: 09/615,233

Art Unit: 2673

Applicant: Kasai et al.

Title: Image Display Apparatus

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
5986813, 5708529, 5712649, 5933279, 4859030.
13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **David L. Lewis** whose telephone number is **(703) 306-3026**. The examiner can normally be reached on MT and THF from 8 to 5. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bipin Shalwala, can be reached on (703) 305-4938. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3900.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



BIPIN SHALWALA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Examiner: David L. Lewis

May 15, 2002